A Budget of Paradoxes. *By* PROFESSOR DE MORGAN.

(Continued from page 195.)

Demonstration de l'immobilitez de la Terre....Par M. de la Jonchere, Ingenieur Français. London, 1728, 8vo.

A synopsis which is of a line of argument belonging to the beginning of the preceding century.

The Circle squared; together with the Ellipsis and several reflections on it. The finding two geometrical mean proportionals, or doubling the cube geometrically. By Richard Locke. London, no date, probably about 1730, 8vo.

According to Mr. Locke, the circumference is three diameters, three-fourths the difference of the diameter and the side of the inscribed equilateral triangle, and three-fourths the difference between seven-eighths of the diameter and the side of the same triangle. This gives, he says, 3·18897. There is an addition to this tract, being an appendix to a book on the longitude.

The Circle squar'd. By Thos. Baxter, Crathorn, Cleaveland, Yorkshire. London, 1732, 8vo.

Here $\pi = 3{\cdot}0625$. No proof is offered.

* The Longitude discovered by the Eclipses, Occultations, and Conjunctions of Jupiter's planets. By William Whiston. London, 1738.

This tract has, in some copies, the celebrated preface containing the account of Newton's appearance before the Parliamentary Committee on the longitude question in 1714 (Brewster, ii. 257–266). This "historical preface" is an insertion, and is dated April 28, 1741, with four additional pages dated Aug. 10, 1741. The short "preface" is by the publisher, John Whiston, the author's son.

Le vrai système de physique générale de M. Isaac Newton exposé et analysé en parallèle avec celui de Descartes. By Louis Castel [Jesuit and F.R.S.]. Paris, 1743, 4to.

This is an elaborate correction of Newton's followers, and of Newton himself, who it seems did not give his own views with perfect fidelity. Father Castel, for instance, assures us that Newton placed the sun *at rest* in the centre of the system: Newton left the sun to arrange that matter with the planets and the rest of the universe. In this volume of 500 pages there is right and wrong, both clever.

A dissertation on the Æther of Sir Isaac Newton. By Bryan Robinson, M.D. Dublin, 1743, 8vo.

A mathematical work, professing to prove that the assumed ether causes gravitation.

Mathematical principles of theology, or the existence of God geometrically demonstrated. By Richard Jack, Teacher of Mathematics. London, 1747, 8vo.

Propositions arranged after the manner of Euclid, with beings represented by circles and squares. But these circles and squares are logical symbols, not geometrical ones. I brought this book forward to the Royal Commission on the British Museum as an instance of the absurdity of attempting a *classed* catalogue from the *titles* of books. The title of this book sends it either to theology or geometry: when in fact it is a logical vagary. Some of the houses which Jack built were destroyed by the fortune of war in 1745, at Edinburgh: who will say the rebels did no good whatever? I suspect that Jack copied the ideas of J. B. Morinus, *Quod Deus sit,* Paris, 1636, 4to., containing an attempt of the same kind, but not stultified with diagrams.

No. VII. 1747—1751.

Dissertation, découverte, et démonstrations de la quadrature mathématique du cercle. Par M. de Fauré, géomètre. [*s. l.*, probably Geneva] 1747, 8vo.

Analyse de la Quadrature du Cercle. Par M. de Fauré, Gentilhomme Suisse. Hague, 1749, 4to.

According to this octavo geometer and quarto gentleman, a diameter of 81 gives a circumference of 256. There is an amusing circumstance about the quarto which has been overlooked, if indeed the book has ever been examined. John Bernoulli (the one of the day) and Koenig have both given an attestation: my mathematical readers may stare as they please; such is the fact. But, on examination, there will be reason to think the two sly Swiss played their countrymen the same trick as the medical man played Miss Pickle, in the novel of that name. The lady only wanted to get his authority against sousing her little nephew, and said "Pray, doctor is it not both dangerous and cruel to be the means of letting a poor tender infant perish by sousing it in water as cold as ice?" —"Downright murder, I affirm," said the doctor; and certified accordingly. De Fauré had built a tremendous scaffolding of equations, quite out of place, and feeling cock-sure that his solutions, if correct, would square the circle, applied to Bernoulli and Koenig—who after his tract of two years before, must have known what he was at—for their approbation of the solutions. And he got it, as follows, well guarded:—

Suivant les suppositions posées dans ce Mémoire, il est si évident que t doit être=34, y=1, et z=1, que cela n'a besoin ni de preuve ni d'autorité pour être reconnu par tout le monde.

à Basle le 7e Mai, 1749. JEAN BERNOULLI.

Je souscris au jugement de Mr. Bernoulli, en conséquence de ces suppositions.

à la Haye le 21 Juin, 1749. S. KOENIG.

On which de Fauré remarks with triumph—as I have no doubt it was intended he should do—"il conste clairement par ma présente Analyse et Démonstration, qu'ils y ont déja reconnu et approuvé parfaitement que la quadrature du cercle est mathématiquement démontrée." It should seem that it is easier to square the circle than to get round a mathematician.

An attempt to demonstrate that all the Phenomena in Nature may be explained by two simple active principles, Attraction and Repulsion, wherein the attractions of Cohesion, Gravity and Magnetism, are shown to be one and the same. By Gowin Knight. London, 1748, 4to.

Dr. Knight was Mr. Panizzi's archetype, the first Principal Librarian of the British Museum. He was celebrated for his magnetical experiments. This work was long neglected: but is now recognised as of remarkable resemblance to modern speculations.

An original theory or Hypothesis of the Universe....By Thomas Wright of Durham. London, 4to. 1750.

Wright is a speculator whose thoughts are now part of our current astronomy. He took that view—or most of it—of the milky way which afterwards suggested itself to William Herschel. I have given an account of him and his work in the *Philosophical Magazine* for April, 1848.

Wright was mathematical instrument maker to the King; and kept a shop in Fleet Street. Is the celebrated business of Troughton and Simms, also in Fleet Street, a lineal descendant of that of Wright? It is likely enough, more likely than that—as I find him reported to have affirmed—Prester John was the descendant of Solomon and the Queen of Sheba. Having settled it thus, it struck me that I might apply to Mr. Simms, and he informs me that it is as I thought, the line of descent being Wright, Cole, John Troughton, Edward Troughton, Troughton and Simms.

The theology and philosophy in Cicero's *Somnium Scipionis*, explained. Or, a brief attempt to demonstrate, that the Newtonian system is perfectly agreeable to the notions of the wisest ancients; and that mathematical principles are the only sure ones. [By Bishop Horne, at the age of nineteen.] London, 1751, 8vo.

This tract, which was not printed in the collected works, and is now excessively rare, is mentioned in *Notes and Queries*, 1st S., v. 490, 573; 2nd S., ix. 15. The boyish satire on Newton is amusing. Speaking of old Benjamin Martin, he goes on as follows:—

"But the most elegant account of the matter [attraction] is by that hominiform animal, Mr. Benjamin Martin, who having attended Dr. Desaguliers' fine, raree, gallanty shew for some years [Desaguliers was one of the first who gave public experimental lectures, before the saucy boy was born] in the capacity of a turnspit, has, it seems, taken it into his head to set up for a philosopher."

Thus is preserved the fact, unknown to his biographers, that Benj. Martin was an assistant to Desaguliers in his lectures. Hutton says of him that "he was well skilled in the whole circle of the mathematical and philosophical sciences, and wrote useful books on every one of them": this is quite true; and even at this day he is read by twenty where Horne is read by one; see the stalls, *passim*. All that I say of him, indeed my knowledge of the tract, is due to this contemptuous mention of a more durable man than himself. My assistant secretary at the Astronomical Society, the late Mr. Epps, bought the copy at a stall because his eye was caught by the notice of "Old Ben Martin," of whom he was a great reader. Old Ben could not be a Fellow of the Royal Society, because he kept a shop: even though the shop sold nothing but philosophical instruments. Thomas Wright, similarly situated as to shop and goods, never was a Fellow. The Society of our day has greatly degenerated: those of the old time would be pleased, no doubt, that the glories of their day should be commemorated. In the early days of the Society, there was a similar difficulty about Graunt, the author of the celebrated work on mortality. But their royal patron, "who never said a foolish thing," sent them a sharp message, and charged them that if they found any more such tradesmen, they should "elect them without more ado."

Horne's first pamphlet was published when he was but twenty-one years old. Two years afterwards, being then a fellow of his college, and having seen more of the world, he seems to have felt that his manner was a little too pert. He endeavoured, it is said, to suppress his first tract: and copies are certainly of extreme rarity. He published the following as his maturer view:—

> A fair, candid, and impartial state of the case between Sir Isaac Newton and Mr. Hutchinson. In which is shown how far a system of physics is capable of mathematical demonstration; how far Sir Isaac's, as such a system, has that demonstration; and consequently, what regard Mr. Hutchinson's claim may deserve to have paid to it. By George Horne, M.A., Oxford, 1753, 8vo.

It must be remembered that the successors of Newton were very apt to declare that Newton had demonstrated attraction as a *physical* cause: he had taken reasonable pains to show that he did not pretend to this. If any one had said to Newton—I hold that every particle of matter is a responsible being of vast intellect, ordered by the Creator to move as it would do if every other particle attracted it, and gifted with power to make its way in true accordance with that law, as easily as a lady picks her way across the street; what have you to say against it?—Newton must have replied, Sir! if you really undertake to maintain this as *demon-*

strable, your soul had better borrow a little power from the particles of which your body is made: if you merely ask me to refute it, I tell you that I neither can nor need do it; for whether attraction comes in this way or in any other, *it comes,* and that is all I have to do with it.

The reader should remember that the word *attraction,* as used by Newton and the best of his followers, only meant a *drawing towards,* without any implication as to the cause. Thus whether they said that matter attracts matter, or that young lady attracts young gentleman, they were using one word in one sense. Newton found that the law of the first is the inverse square of the distance: I am not aware that the law of the second has been discovered; if there be any chance, we shall see it at the year 1856 in this list.

In this point young Horne made a hit. He justly censures those who fixed upon Newton a more positive knowledge of what attraction is than he pretended to have. "He has owned over and over he did not know what he meant by it—it might be this, or it might be that, or it might be anything, or it might be nothing." With the exception of the *nothing* clause, this is true, though Newton might have answered Horne by "Thou hast said it."

Again, Horne quotes Rowning as follows:—

"Mr. Rowning pt. 2 p. 5 in a note, has a very pretty conceit upon this same subject of attraction, about every particle of a fluid being intrenched in three spheres of attraction and repulsion, one within another, 'the innermost of which (he says) is a sphere of repulsion, which keeps them from approaching into contact; the next, a sphere of attraction, diffused around this of repulsion, by which the particles are disposed to run together into drops; and the outermost of all, a sphere of repulsion, whereby they repel each other, when removed out of the attraction.' So that between the *urgings,* and *solicitations,* of one and t'other, a poor unhappy particle must ever be at his wit's end, not knowing which way to turn, or whom to obey first."

Rowning has here started the notion which Boscovich afterwards developed.

I may add to what precedes that it cannot be settled that, as Granger says, Desaguliers was the first who gave experimental lectures in London. William Whiston gave some, and Francis Hauksbee made the experiments. The prospectus, as we should now call it, is extant, a quarto tract of plates and descriptions, without date. Whiston, in his life, gives 1714 as the first date of publication, and therefore, no doubt, of the lectures. Desaguliers removed to London soon after 1712, and commenced his lectures soon after that. It will be rather a nice point to settle which lectured first; probabilities seem to go in favour of Whiston.

(*To be continued.*)